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FUNNEL WITH EXCHANGEABLE FILTER CARTRIDGE INTENDED FOR MOUNTING ON EXHAUST GAS MUFFLERS OF AUTOMOBILES

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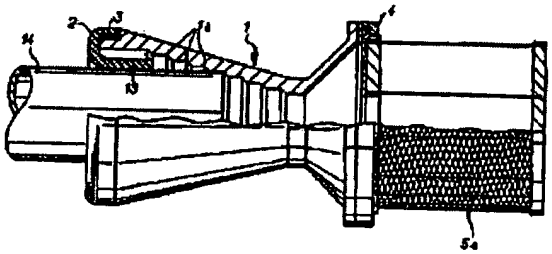
[Abstract]

A funnel with exchangeable filter cartridge intended for mounting on exhaust mufflers of light and heavy automobiles, including some means for fastening and clamping on said exhaust pipes, characterized by the fact that these means entail flexible membrane (13) cut out in the shape of a star and connected to the base of funnel (1) which receives exhaust pipe (14).



The present invention relates to a funnel with exchangeable filter cartridge intended for mounting on exhaust gas mufflers of light and heavy automobiles.

This type of funnel is generally made up of two truncated cones made of molded rubber having a shared small base and thus assumes roughly the general shape of an hourglass, the large base of one of these truncated cones intended for receiving the exhaust pipe of an automobile, and the large base of the other truncated cone intended for receiving a known type of filter cartridge.

Advantageously, the internal surface of the truncated cone by which the exhaust pipe is covered is ribbed so that it can be adapted to pipes of different diameters after they are introduced by force.

Different fastening systems mainly using clamping collars have been recommended. However, these systems involve awkward mechanical means which are expensive and ineffective because the funnel very often becomes disconnected from the exhaust pipe as soon as the engine speed and therefore the pressure of the gases rises.

As for the other base of the hourglass on which a filter cartridge is mounted, it has some means of fastening which are fitted to the cartridge. These means are inspired from the well known so-called "bayonet" system of mounting and clamping. They are generally satisfactory. So the invention seeks to improve to a great extent the means of fastening and clamping of said funnel on an exhaust pipe in such a way as to avoid their separation by opposing the forces tending to disconnect them.

These means of fastening and clamping to which the present invention relates are essentially characterized by the fact that they entail a flexible membrane cut out in the shape of a star and which is connected to the base of the funnel which receives the exhaust pipe.

Advantageously, said membrane is borne by a ring which is itself borne by said base.

According to a possible embodiment, said ring is connected to said base by gluing, screwing and other equivalent assembling means.

The scope and value of the invention will emerge more clearly from the following description given with regard to the appended drawings in which:

- Figure 1 is a front view partially in longitudinal axial section of a funnel according to the invention provided with a known type of filter cartridge;
- Figure 2 is an end view of one of the bases of said funnel showing the fastening and clamping membrane according to the invention;
- Figure 3 is an end view of the other base of the funnel of Figure 1 showing the fastening means for the filter cartridge which is used;
- Figures 4, 5, 6 are views corresponding respectively to Figures 1, 2 and 3 in the case of a funnel provided with another known type of filter cartridge;

- Figure 7 is a view corresponding to one of these funnels covering an exhaust pipe.

In reference to Figures 1-3, a funnel with filter cartridge consists of molded piece 1 made of rubber which funnel assumes the general shape of an hourglass, one of whose bases carries a so-called "bayonet" system of fastening and clamping 4 of known type which receives cartridge 5 which, as illustrated in Figure 1, is composed, according to a first well-known formula, of first and second filtering media 6-7 comprising a synthetic foam, third filtering medium 8 based on absorbent fibers, medium 9 based on activated charcoal, and finally closing filter 10, the whole protected by the screen and its mask 11-12.

Mounted on the other base is a molded piece in the form of ring 2 which can be screwed on piece 1 but which, in the case illustrated here, is assembled by gluing with intermediate reinforcing ring 3. These pieces bear flexible membrane 13 (made of rubber, for example) which nevertheless has a certain stiffness. This membrane has cut-outs in the shape of a star, as illustrated in Figures 2 and 5.

The internal wall of piece 1, on the side intended for receiving the exhaust pipe, is ribbed at 1a as illustrated in the figures.

This type of funnel thus equipped allows the escape of the gases in the axial direction (arrows F).

In reference to Figures 4-6, in contrast, the gases are evacuated laterally according to arrows F, with cartridge 5a also of a well-known type which is composed of filtering media based on materials of the so-called folded type. Whether the funnel is provided with one type of cartridge or another, it is used in the same manner to cover exhaust pipe 14 as shown in Figure 7.

Upon examination of this figure, one sees that this pipe 14 has been inserted by force into funnel 1 until flattening against its interior wall due to ribs 1a. This insertion is accompanied by the folding of sectors of membrane 13 back towards the interior, sectors which flatten and squeeze said pipe, holding it firmly in position. This folding back is made possible precisely by the execution of the star shaped cut-outs in membrane 13.

With such an assembly, it is observed that the expulsion or disconnection of pipe 14 is prevented in spite of the high pressures of the expelled gases, and that the assembly is thus able to stay mounted for a considerable duration, a result not attained with the fastening devices known up to now.

It goes without saying that the present invention has only been described on a purely explanatory and nonlimiting basis and that any useful modification can be made to it without leaving the scope of the invention.

Claims

1. A funnel with exchangeable filter cartridge intended for mounting on exhaust mufflers of automobiles, including some means for fastening and clamping on said exhaust pipes, characterized by the fact that these means entail flexible membrane (13) cut out in the shape of a star and connected to the base of funnel (1) which receives exhaust pipe (14).

2. A funnel according to Claim 1, characterized by the fact that said membrane (13) is borne by ring (2) which is itself borne by said base.

3. A funnel according to Claim 1 or 2, characterized by the fact that said ring (2) is connected to said base by gluing, screwing and other equivalent assembling means.

FIG. 1

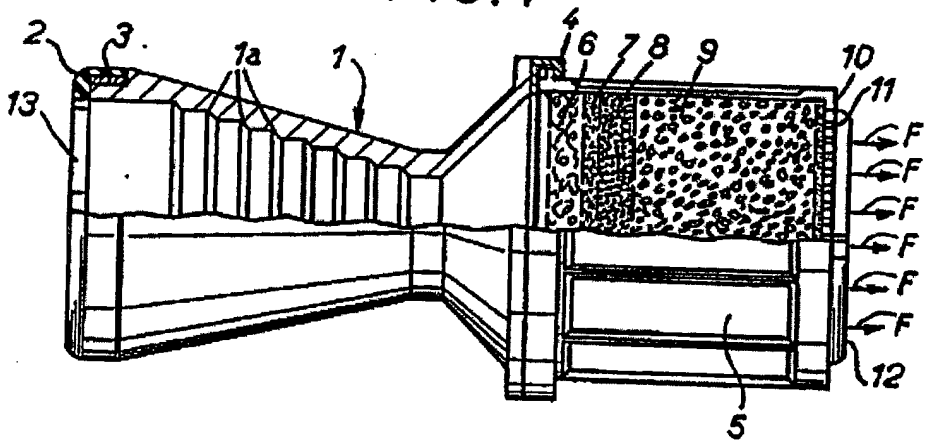


FIG. 2

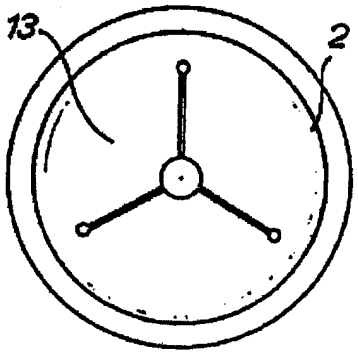


FIG. 3

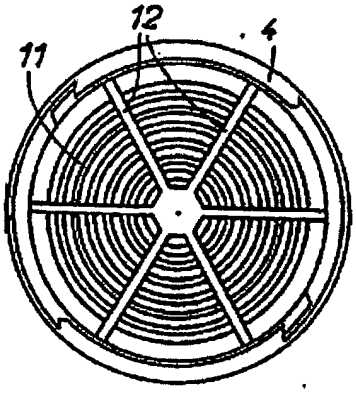


FIG. 4

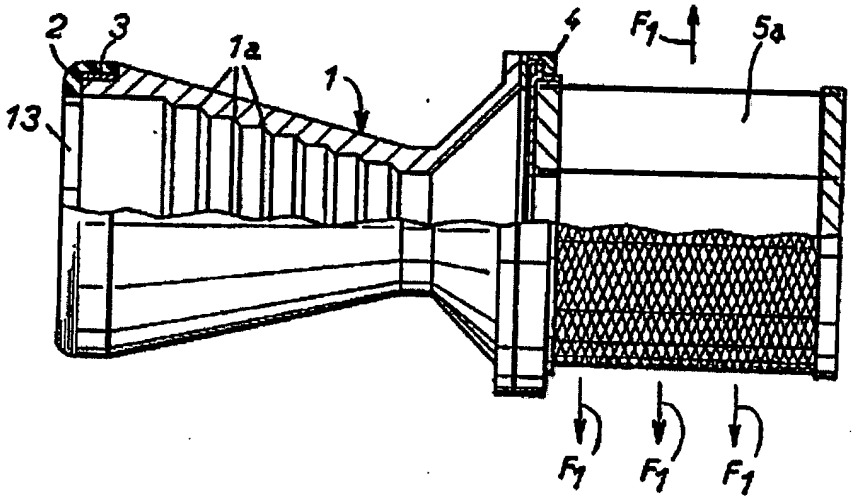


FIG. 5

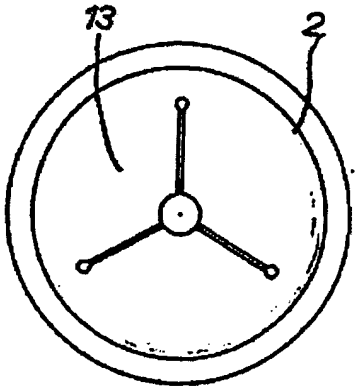


FIG. 6

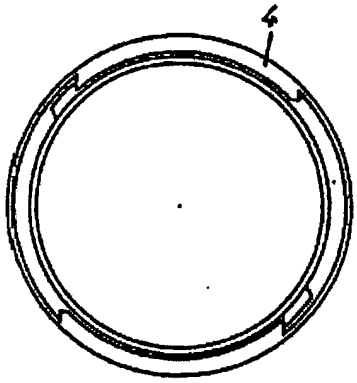


FIG. 7